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ABSTRACT

Designed as an elective course of study for grades seven through nine, this curriculum guide provides a study of the political, economic, and social aspects of ecological problems in the community, state, or nation. The focus is on the causes and effects of pollution and alternative courses of governmental and student (citizen) action. A suggested sequence is given for the nine week course. Weeks 1 - 2: pupils discuss vocabulary terms and identify basic concepts and principles as they relate to ecology. Weeks 3 - 6: students analyze the cause of ecological problems and examine examples of and effects of five types of pollution -- air, water, land, noise, and people, and, identify case studies of pollution in the community and nation. Weeks 7 - 9: students examine legislation and its enforcement, formulate programs, and enlist community support. Arranged in the same format as other quinmester courses, a learning activities section provides a picture of the main idea and specific behavioral objectives for a set of learning activities. Related documents are SO 002 708 through SO 002 718, and SO 002 768 through SO 002 792. (Author/SJM)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

DADE COUNTY PUBLIC SCHOOLS

SP 002 784

Social Studies: ECOLOGY AND SURVIVAL 6470.05
6412.13

DIVISION OF INSTRUCTION•1971

SOCIAL STUDIES

ECOLOGY AND SURVIVAL

6470.05
6412.13

by

Elaine Liftin

for the

Division of Instruction
Dade County Public Schools
Miami, Florida
1971

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COURSE DESCRIPTION: A STUDY OF THE POLITICAL, ECONOMIC AND SOCIAL ASPECTS OF ECOLOGICAL PROBLEMS IN THE COMMUNITY, STATE AND NATION. THE FOCUS IS ON THE CAUSES AND EFFECTS OF POLLUTION AND ALTERNATIVE COURSES OF GOVERNMENTAL AND STUDENT (CITIZEN) ACTION. STUDENTS ARE ENCOURAGED TO EXAMINE THEIR OWN POSITIONS AND PERSONAL RESPONSIBILITIES IN THE AREA OF ECOLOGY.

CLUSTER: GENERAL SOCIAL STUDIES
GRADE LEVEL: 7 - 9
COURSE STATUS: ELECTIVE
INDICATORS OF SUCCESS: NONE

COURSE RATIONALE: Are we committing planetary suicide? Can we survive? It is necessary to take a look at one of the most challenging problems of our age, pollution of our environment. To meet this challenge we must have a basic knowledge of the problem. Information concerning dangers which threaten our natural environment and the laws which have attempted to curb these dangers must be understood in order to know what is being done now and what can be done in the future. It is therefore desirable to view solutions to our problems on three levels - political, economic, and social - especially as they relate to one's own community. Personal involvement and group action in dealing with the ecological enigma will culminate the course of study.

INTRODUCTION

This course of study was written as part of a total effort to revise curriculum to fit the quinmester administrative organization of schools. The materials and information in this guide are meant to be neither all-inclusive nor prescriptive; but rather, an aide to teachers as they plan instructional programs, taking into account student needs and characteristics, available resources, and other factors.

The major intent of this publication is to provide a broad framework of goals and objectives, content, teaching strategies, class activities, and materials all related to a described course of study. Teachers may then accept the model framework in total or draw ideas from it to incorporate into their lessons.

The guide is divided into 1) a broad goals section, 2) a content outline, 3) objectives and learning activities, and 4) materials. The first section provides descriptive and goal-oriented information for the teacher; "indicators of success" refers to suggested prerequisite or corequisite experiences. The content outline illustrates, in general terms, the scope and major subdivisions of the course. The objectives and learning activities section, hopefully, provides a total picture of the concept or main idea and specific behavioral objectives for a set of given learning activities. The materials section of the guide lists resources in four categories: essential textural or other material; alternate classroom materials to use in place of or in addition to the aforementioned; supplementary teacher resources; and supplementary student resources. The appendix may include other material appropriate for a specific course: e.g., pretests, readings, vocabulary, etc.

Anyone having recommendations relating to this publication is urged to write them down and send to: Social Studies Office, Room 306, Lindsey Hopkins, A-1.

James A. Fleming
Social Studies Consultant

COURSE GOALS: THE STUDENT WILL

1. IDENTIFY BASIC ECOLOGICAL TERMINOLOGY.

2. MAKE GENERALIZATIONS ABOUT SELECTED BASIC CONCEPTS AND PRINCIPLES OF ECOLOGY.

3. DESCRIBE THE CONDITIONS OF THE ENVIRONMENT, PHYSICAL AND BIOLOGICAL, THE INTERRELATIONS OF ANIMALS, POPULATIONS AND COMMUNITIES, AND THE CONSERVATION OF NATURAL RESOURCES.

3. EXAMINE SPECIFIC EXAMPLES OF POLLUTION IN ONE'S OWN AREA, AS WELL AS THROUGHOUT VARIOUS PARTS OF THE COUNTRY AND DESCRIBE THE APPROPRIATE METHOD OF ACTION TO TAKE ON POLITICAL, ECONOMICAL, AND SOCIAL LEVELS TO ATTEMPT TO RESOLVE THAT WHICH IS DESTROYING OUR NATURAL WEALTH.

5. FORMULATE A PHILOSOPHY WITH REGARD TO THE CONTROL AND IMPROVEMENT OF OUR ENVIRONMENT AND TO THE CONSERVATION OF OUR NATURAL INHERITANCE, OUR RESOURCES.

6. PREPARE PROGRAMS THAT WILL ENLIST PUBLIC SUPPORT WHICH WILL CONTRIBUTE TO THE PREVENTION OF FURTHER POLLUTION, AND THE CONTAMINATION OF OUR REMAINING RESOURCES.

7. PARTICIPATE IN A COOPERATIVE PROGRAM BY WHICH TO WORK SIDE BY SIDE IN AN ATTEMPT TO SOLVE A COMMON ECOLOGICAL PROBLEM AND TO REACH A COMMON GOAL.

SUGGESTED SEQUENCE

WEEKS 1 - 2	INTRODUCE COURSE AND TERMS AND PRINCIPLES OF ECOLOGY
WEEKS 3 - 6	DEFINE ECOLOGICAL PROBLEMS. EXAMINE CASE STUDIES IN POLLUTION IN THE COMMUNITY AND NATION
WEEKS 7 - 9	STUDENT INVOLVEMENT - EXAMINE LEGISLATION AND ITS ENFORCEMENT, FORMULATE PROGRAMS AND ENLIST COMMUNITY SUPPORT

FOR SUPPLEMENTARY MATERIALS, PLEASE REFER TO THE DADE COUNTY BULLETIN: TEN YEARS TO GO! ECOLOGY IN THE JUNIOR HIGH SCHOOL. 10B-SU-7.

COURSE CONTENT OUTLINE:

I. ECOLOGY

A. Physical Factors in the Environment

B. Biotic Factors in the Environment

1. Population
2. Community
3. Ecosystem
   a. Interactions
   b. Maintenance
   c. Changes

II. ECOLOGICAL PROBLEMS

A. Causes - People

B. Types

1. Air
   a. Industrial
   b. Personal
   c. Agriculture
   d. Transportation
2. Water
   a. Industrial
   b. Personal
   c. Agriculture
   d. Transportation

II. B. 3. Land
   a. Agriculture
   b. Personal
   c. Poor Planning and Zoning
4. Noise
   a. Entertainment
   b. Traffic
   c. Industry
5. People
   a. Overpopulation
   b. Distribution

III. SOLUTIONS TO POLLUTION

A. Current Courses of Legal Action

1. Federal Laws and Regulations
2. Local Laws and Regulations
3. Enforcement and Difficulties

B. Dissemination of Information

1. Educating the Public
   a. Mass Media
   b. Word of Mouth
   c. Books and Studies

C. Student Involvement

1. Publicity of Problems
2. Formulate Programs

PHASE I - INTRODUCTION TERMS AND PRINCIPLES OF ECOLOGY

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
ECOLOGY IS THE STUDY OF PLANTS AND ANIMALS AND THEIR INTERRELATIONSHIPS WITH THEIR ENVIRONMENT	A. Given the physical factors in the environment, the student will explain how the alteration of one can affect the total environment.	1. Have the class look up the definition of the term ecology and discuss its importance for our study at this time. 2. Via a transparency dealing with conditions of the environment, elicit the physical factors that are most important to assure the success of living things. Suggested Resources: A. Light B. Temperature C. Atmospheric Gases D. Humidity and Water E. Substratum 3. Discuss the effects of removing one of the physical factors listed above on all of the others. A. What would happen if there was no light energy to allow green plants to carry on photosynthesis? (There would be no more green plants). B. Without green plants to replenish the supply of oxygen in the air, what would result? (There would be an over-abundance of carbon dioxide and we would lose our air supply).

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NO ORGANISM EXISTS AS AN ENTITY, SEPARATE AND DISTINCT FROM THE ENVIRONMENT AND WHEN THERE IS A DISTURBANCE OR DISRUPTION, IT AFFECTS EVERYTHING IN THE ENVIRONMENT.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
THERE IS A DYNAMIC EQUILIBRIUM WHICH EXISTS IN THE INTERACTIONS OF ORGANISMS WITH THEMSELVES AND WITH THE ENVIRONMENT.	**B. Given the biotic factors in the environment, the students will explain how they exist in a balance with nature.**	**1. Discussion** **A. What do we mean by the Biotic factors in the environment? What are ORGANISMS?** **B. How do the interactions of organisms (biotic factors) influence the development and survival of one to another as well as of the other species?** **C. Recall the phrases:** NO MAN IS AN ISLAND. NO MAN STANDS ALONE. EACH MAN'S JOY IS JOY TO ME. EACH MAN'S GRIEF IS MY OWN. **(1) Have students tell specific instances or examples where the above phrases are true.** **(2) Ask, Have you ever been involved in an experience where the actions of one person directly affected the well-being and activity of the others? .. ...Explain.** **(3) Connect these ideas with the concept that nature is in balance.** **----Green plants are food for cows who are in turn food for humans who in turn die and provide food for the plants and so on.** **(4) Removal of one of the above, plants, for example, upsets the balance.** **(Use a scale if necessary to illustrate the term** BALANCE - EQUILIBRIUM**).**

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
	A. The student will cite examples of interactions among organisms in an ecosystem.	1. Have students define and explain the terms POPULATION, COMMUNITY, and ECOSYSTEM, and give examples of each. a. All members of a species inhabiting a given location constitute a POPULATION. (A species is a group of organisms that are more or less alike that can interbreed and produce fertile offspring). b. A unit consisting of plant and animal populations that interact in a given environment is known as a COMMUNITY. c. The living community and non-living environment functioning together is called an ecological system or ECOSYSTEM. 2. Have students observe (in person or on film) or read about conditions in a balanced aquarium, or in a self-contained space ship. 3. Have students describe in writing the following: a. Interaction among the organisms b. Flow of energy c. Cycling of materials
AN ECOSYSTEM IS SELF-SUSTAINING UNIT WHEN PROPERLY MAINTAINED WITH A SOURCE OF ENERGY ABLE TO BE INCORPORATED INTO ORGANIC COMPOUNDS WHICH CAN BE CYCLED BETWEEN ORGANISMS AND THEIR ENVIRONMENT.	B. Describe the maintenance requirements for a successful ecosystem.	1. Divide students into committees to identify, explain, and illustrate these terms. a. SAPROPHYTES - plants living on dead organic matter like bacteria of decay. b. HERBIVORES - plant eating animals like cow and horses. c. CARNIVORES - flesh eating animals. 1. Predators - animals which kill other living animals and feed of them, e.g., lions, hawks. 2. Scavengers - animals which eat organisms they have not killed, e.g., valtures, hyenas. 3. Omnivores - animals that eat both plans and animals, e.g., man.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
A SELF PERPETUATING COMMUNITY WHERE POPULATIONS EXIST IN BALANCE WITH EACH OTHER AND WITH THE ENVIRONMENT IS CALLED A CLIMAX COMMUNITY WHICH WILL PERSIST AS SUCH UNTIL A MAJOR CLIMATIC, GEOLOGIC, OR BIOTIC CHANGE ALTERS OR DESTROYS IT.		2. Have students view transparencies depicting the food chain and web and discuss their components. a. Producers - green plants b. Consumers - primary (eat green plants) secondary (eat primary consumers) c. Decomposers - break down wastes and dead organisms (basteria) and give of additional energy. 3. Have students draw a complete food chain and web and report on at least two completely different ones, e.g., chains dealing with aquatic animals and chains dealing with land animals. 4. Have students view transparencies on materials cycles such as the nitrogen or oxygen cycle and elicit the concept about when they exist view the acetate. 5. Have students list the requirements for maintaining a self-sustaining ecosystem and explain how a lack of any one of these would upset the said ecosystem. a. A constant source of energy. b. A living system capable of incorporating this energy into organic compounds. c. A cycling of materials between organisms and their environment. 6. Students will define the terms succession, pioneer organisms, and climax stage as they apply to ecology.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
		7. They will then write a report on or construct a poster which traces an ecosystem from its pioneer organisms through to its climax stage. It may begin on a bare rock and result in a climax community which is stable, has self maintenance, and the quality of uniformity, e.g., Michigan sand dunes, have various stages from the water's edge to the forest.
A CLIMAX COMMUNITY ONCE DESTROYED IS NOT IMMEDIATELY REPLACED AS LONG PERIODS OF TIME ARE REQUIRED FOR ECOLOGICAL SUCCESSION AFTER A MAJOR DISTURBANCE. SOME DISTURBANCES RESULT IN CHANGES SO DRASTIC THAT THE ORIGINAL CLIMAX COMMUNITY NEVER RETURNS.	C. The Student will illustrate the effects of a disturbance on a climax community.	1. Have students observe and participate in experiments which will demonstrate that a change in environment results in a change in the behavior of an organism. The experiment will demonstrate that a balanced environment cannot exist if its natural resources are polluted. 2. Have students research and report on instances where an ecosystem disrupted by an environmental disturbance takes years to replace and in many cases is irreplaceable, for example, the replacement of a forest following a forest fire. NOTE: Suggested transparencies may be obtained from a variety of sources. One excellent source is the Milliken Full Color Transparency Book on Ecology, published by the Milliken Publishing Company in St. Louis, Missouri. 3. Have students complete crossword puzzles using ecological terms (See Appendix). 4. Take a field trip in which there is identification of symbiotic relationships and such animals as predators, scavengers, and omnivores, and of food and material chains. 5. Have students play a game of password using terms identified in Appendix - covering Ecology and Pollution vocabulary lists. Give one (1) word clues, e.g., word: environment, clue: surroundings.

PHASE II CASE STUDIES IN POLLUTION

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
THERE ARE MANY TYPES OF POLLUTION. FIVE MAJOR EXAMPLES INCLUDE: A. AIR POLLUTION B. WATER POLLUTION C. LAND POLLUTION D. NOISE POLLUTION E. PEOPLE POLLUTION (OR OVERPOPULATION)	A. The student will examine man's responsibilities for his environment.	1. Discuss and evaluate the truth in this statement: PEOPLE ARE AT THE HEART OF ANY PROBLEM OF POLLUTION CONTROL IN THE ENVIRONMENT. 2. Have students answer the question, IS MAN AN ENDANGERED SPECIES? Have students give concrete examples to back their opinions. 3. View New York Times filmstrip series: Crisis of the Environment, Part I - Is Man An Endangered Species? 4. Discuss the environmental problems, factors influencing them, points of view on them, proposals to deal with them, and the like. 5. Teacher is referred to the series of junior high school filmstrips on pollution currently in production by the Department of Media, Dade County School. (They were not available for examination when this course was written).
	B. The student will cite examples of pollution.	1. Students should define pollution and conservation to include the following. a. POLLUTION - is any substance that is added to the environment as a result of man's activities which has a measurable and generally detrimental effect on the environment. b. CONSERVATION - is not a restriction. It is basically a program of good management of our natural resources. (Students may be given these two definitions for their critical assessment).

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
		2. Discuss the term pollution and list examples of particular types of pollution students have seen or heard about in their community and what effects these types of pollution have had on their environment. 3. Have students bring examples of pollution into the classroom, for example: a. Bring containers - one containing canal water and one containing tap or distilled water (water pollution). Have students comment on the contents of the containers. b. Play loud music. Ask students what effect this had on their hearing (noise pollution). c. Conduct an experiment where a piece of white paper is placed at the end of an automobile exhaust pipe (air pollution). The students can comment orally on the the condition of the paper as it appeared before and after the experiment. After the general discussion concerning pollution and its effects on the environment, the teacher can restate the idea that an environment in its natural state is balanced and that pollution contaminates the natural resources of an environment. At this point, the students should be able to generalize that a balanced environment cannot exist if its natural resources are polluted. 4. Invite representatives of the community representing private industry and pollution control agencies and focus on how each is dealing with the pollution problem.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
	C. The student will research causes of, examples of and effects of the various types of pollution in our environment.	1. Have class divide into committees researching these environmental problems. a. Air pollution (see bibliography). b. Water pollution (see bibliography). c. Noise pollution (see bibliography). d. People pollution (see Crisis ...Part V). e. Land pollution (see bibliography). f. Wildlife extinction (see Crisis...Part III) g. Pesticide use and misuse (see Crisis...Part II) h. Transportation Crisis (see Synopsis, Vol. 2, No. 7, Dec. 7.) i. Ecology and social conflict (see Synopsis, Vol. 2, No. 3, Oct. 12.) For each type, the cause of the problem, its current effects, and its future results if unchecked should be included. 2. When the reports are presented, the class may evaluate them in terms of a chart like the one shown.

PROBLEM	CAUSE	EFFECTS	RESULTS IF UNCHECKED
Air Pollution			
Water			
Noise			
People			
Land			
Wildlife			
Pesticides			
Transport.			
Social Confl.			

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
	D. To predict future conditions if pollution control is not initiated.	1. Refer to Committee reports (previously by discussion focus on Pollution - results if unchecked given). Explain how conservation fits into the picture of pollution problems. Predict future conditions if conservation of our air, water, and land resources is not instituted. 2. View New York Times filmstrip series, Crisis of the Environment, Part IV, "Preserve and Protect" Students should outline and explain: a. Environmental Problem - (destroying natural resources) b. Factors influential in the Problem c. Points of view about the Problem d. Views of the Problem in the Past e. Proposals that can Deal with the Problem

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
	A. Identify local pollution problems: source and results.	1. Have students collect data - pamphlets, newspaper articles, and resource books that deal with the problem. Newspaper articles which appeared in the Miami Herald describing sources of pollution in the Dade County area and naming specific pollution offenders in Dade County can be found in the Miami Public Library, 2nd Floor, Florida Room. 2. Have students illustrate, draw, collect, or take pictures demonstrating the various kinds of pollution in his community.
	B. The student will identify and evaluate local and national laws concerning pollution control.	1. Have student examine laws on a federal and local level. Use resources suggested in Ten Years To Go. 2. Discuss whether new laws are necessary or whether more stringent enforcement of current laws will be most effective. 3. Use activities in Ten Years To Go as a guide for researching pollution laws, persons responsible for enforcing said laws. An example of such an activity may be to have students inspect their school and community environment and to collect data on as well as to record pollution violations observed.
	C. Identify the procedures involved in the passing of needed pollution laws on a local and federal level and to propose such legislation.	1. Use activities suggested in Ten Years to Go in the section "Take Action on Pollution - Legislate". An example of such activity may be to participate in a mock legislature in which they will formulate, write, and pass into law a bill on eliminating noise, air, or water pollution, on conserving our resources or on curbing our exploding population.

PHASE III STUDENT INVOLVEMENT

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
	D. Formulate programs which activate community support in pollution control.	1. Have students react to the following quote: "Conservation is one of the biggest jobs facing our nation today and in the foreseeable future. As people act together to improve their habitat, they strengthen the quality of their entire natural world." Comment on the reverse of this quote. What will happen to our world if people fail to act? How may lack of cooperation and/or action destroy our world? 2. Students should examine the connection among community awareness, communication and the effectiveness of legislation. 3. The class may publish a newspaper or newsletter informing the public as to how they might act to solve pollution and other environmental difficulties they face. 4. Students may initiate publicity campaigns to correct pollution offenses. They can: a. Hold a can, paper or bottle drive. (Use money to buy time on T.V. or radio for pollution commercials in newspapers and such). (1) Save paper and Save a tree - magazine and newspaper collection. (2) Recycling of aluminum and other items like returnable deposit bottles. RE-USE A CAN AND STOP OUR ENVIRONMENTAL ABUSE.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
		4. b. For publicity, (1) Display posters in prominent places in the community. (2) Advertise the use of ecologically positive products like deposit or reuseable bottles, detergents without additives like enzymes and phosphates. (3) Assembly plays and dramatizations about saving our environment - stopping pollution. (4) Display ecologically positive products. c. Hold a cleanup campaign. Begin with classroom to school, with your room to your home to your grounds to the community, store grounds, recreational areas, streets. d. Organize a group for improving the environment. e. Students will initiate a compaign to enlist the assistance, beginning at the "grassroots" level - their own study body - the inhabitants of the community. f. Secure evidence against pollution offenders and send it to the District Attorney's Office and publicize it via mass media. g. Push for national legislation. Petition for initiative of pollution laws and petition for recall of those officials who act without regard for our environment. h. Enlist the assistance of local news mediums-radio and television-to publicize your project. i. Appear with facts and materials before service clubs and your City Council or County Commission. j. Have students express their own philosophies toward conservation. For example, they may put it into slogans like, "You'd Better Conserve and Save Today, We'll Die If You Wait For Another Day," or illustrate their personal code of conservation ethics via collages and the like.

FOCUS	OBJECTIVE	LEARNING ACTIVITIES
		3. Have class investigate our water resources as to how soon our fresh water supply will run out, how the ecology of the everglades may be destroyed by salt water intrusion, how our beaches may become unfit for swimming, how the marine life in our rivers and canals could be destroyed and how our drinking water could become unfit for human consumption. 4. The class might take a field trip to one of the City of Miami water plants and present reports on their observations. 5. Individual reports might be assigned on types of water pollution. a. Thermal b. Oil Spills c. Detergent d. Sewage e. Pesticides f. Salt Water Intrusion g. Industrial Wastes 6. The class may do a study of noise pollution as a source of a serious national health problem. They may perform experiments and make conclusions based upon their observations. See Ten Years To Go, pp. 125 - 135, "Noise Pollution". 7. Debate - Do Pesticides have a Positive or Negative Effect on our Environment? 8. Make a list of pesticides and chart their purposes and effect on the environment. See Ten Years To Go, pp. 139-147, "Pesticides".

MATERIALS:

1. RECOMMENDED BASIC TEXTUAL AND OTHER MATERIALS:

Ten Years To Go - Ecology In The Junior High School. Bulletin No. B-SU-1, Experimental Edition, Division of Instruction, Dade County Public Schools, 1970. (For the teacher)

2. ALTERNATE STUDENT AND CLASS MATERIAL:

A. Textual:

Our Polluted World. Columbus, Ohio: American Education Publications, 1970.
Billington, Elizabeth J. Understanding Ecology. New York: Warne, 1968.
Bregman, Jack, and Lenormand, Sergei, The Pollution Paradox,
Curriculum Innovations. Synopsis: Ecology - A Study of Social Conflict. Chicago: Curriculum Innovations, Vol. 2, No. 3 (October 12, 1970).
Curriculum Innovations. Synopsis: Transportation and the Environment Crisis. Chicago: Curriculum Innovations, Vol. 2, No. 7 (December 7, 1970).
DeBell, Garrett, Editor. The Environmental Handbook. New York: Ballantine Books, 1969.
Edelson, Edward, The Battle for Clean Air, Public Affairs, No. 403A, 1970.
Erlun, P. R., The Population Bomb, New York: Ballantine Books, 1968.
Friendly, N. Miraculous Web: The Balance of Life. New York: Prentice Hall, 1963.
National Staff of Environmental Action. Earth Day - The Beginning. New York: Bantam Books, 1970.
Perry, John. Our Polluted World - Can Man Survive? New York: Franklin Watts, 1967.
Saveland, Robert. World Resources. Boston: Ginn and Co., 1968.
Unit 5 Habitat And Resources, High School Geography Project, U.S.A.: The MacMillan Co., 1970.

B. Audio-Visual

Ortleb and Candice. Ecology - A Milliken Full Color Transparency Book. St. Louis, Missouri: Millikin Publishing Company, 1969.

Films

See Bulletin Ten Years To Go.

Filmstrips

Crisis of the Environment. New York Times Co., 1970. 5 Filmstrips, 5 Records, 5 Discussion Guides. (Very Useful).

Environment: Changing Man's Values. Guidance Associates of Pleasantville. 1 Filmstrip, 1 Record.

Mans Nature Environment - Cities Through Abuse. Guidance Associates of Pleasantville, 1 Filmstrip, 1 Record.

Air Pollution, Popular Science Audio-Visuals. 1970. 1 Filmstrip.

C. Other

Environmental Education Committee, Box 8236, University of Miami Branch, Coral Gables, Florida. (Speakers can be provided on the general environment, population, all forms of pollution, environmental planning, and individual or group action to protect the Environment).

D. Supplemental Pupil Resources

American Education Publications Classroom Periodicals. Ecology Program. Columbus, Ohio: American Education Publications, 1970.

Berland, T. Noise - The Third Pollution. Public Affairs, No. 449, Public Affairs Committee, 1970.

Caldwell, L. K. Environment: A Challenge to a Modern Society, New York: Doubleday.

Dasmann, Raymond, An Environment Fit For People. Public Affairs Pamphlet, No. 421, U.S.A.: Public Affairs Committee, 1970.

3. TEACHER REFERENCE MATERIAL

"Teacher's Resource for Synopsis". Curriculum Innovations, Inc., Vol.2, No. 3. October 12, 1970. Discussion aids and Reprints from 1970 periodicals about "Focus - Ecology - A Study of Social Conflict".

"Teacher's Resource for Synopsis". Curriculum Innovations, Inc., Vol. 2, No. 7, December 7, 1970. Discussion aids and Reprints from 1970 periodicals about "Focus: Transportation and the Environment Crisis".

Where Have All The Flowers Gone? A reference guidance and sourcebook to Ecological Literature. Arrow Company. 3385 South Bannock, Englewood, Colorado, 80110, 1970. A bibliography of books, articles, films on the environment and ecology.

APPENDIX: VOCABULARY TERMS AS THEY RELATE TO ECOLOGY

Ecology

Equilibrium

Environment

Interaction

Interrelationship

Organism

Species

Biotic Organization

Population

Community

Ecosystem

Saprophyte

Herbivore

Carnivore

Predator

Omnivore

Scavenger

Symbiosis

Commensalism

Mutualism

Parasitism

Food Chain and Web

Producer

Consumer

Decomposer

Materials Cycle

Nitrogen Cycle

Ecosystem

Poineer Organism

Climax Community

Self-Sustaining

Pollution

Conservation

Noise

Decibel